CONFIDENTIAL

5 March 1957

MEMORANDUM FOR: THE RECORD

SUBJECT: Trip Report, [redacted] 25X1

1. Time and Place of Meeting: 14 February 1957, at [redacted] 25X1

[redacted] 25X1

2. Attendance: [redacted] 25X1

3. Discussion:

a. RCA had ready for delivery, the following items:

(1) 5 Type B Microphones

(2) 6 Type B-A microphones

(3) Response curves for the above microphones

(4) 1 preliminary model of the power supply and gain control for the type BA, CA and DA microphones. The following is the nomenclature for the various microphones.

Type B - Std. length magnet
Type B-A - Cut down magnet with amplifier
Type C-A - Std. length with amplifier
Type D-A - Cut down magnet with amplifier (Shoe heel)

The circuit diagram of the power supply and the response curves for the B and B-A are attached to this report. It should be noted that the amplifier for the type C-A and D-A microphone is 10 db better than the amplifier used for the type B-A. The output impedance of the matching unit is 50 ohms balanced and is independent of the gain control. Since a transistor is included in the design, there is no signal loss in going through the matching unit. If the design of the unit is satisfactory, [redacted] will supply five more. 25X1

The preliminary design of the type D-A microphone is outlined in an attached diagram. It will have a plastic probe and be approximately the size outlined in the drawing.

b. In discussing new microphone projects

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25X1

b. In discussing new microphone projects with [redacted] two possible programs evolved. The first would be more in the realm of a development program as no new microphone structure is being considered. Briefly, [redacted] would propose to build a unitized microphone consisting of the following, as illustrated:

25X1

(1) Probe & Housing

(2) Microphone

(3) Amplifiers

(4) Power box and matching unit

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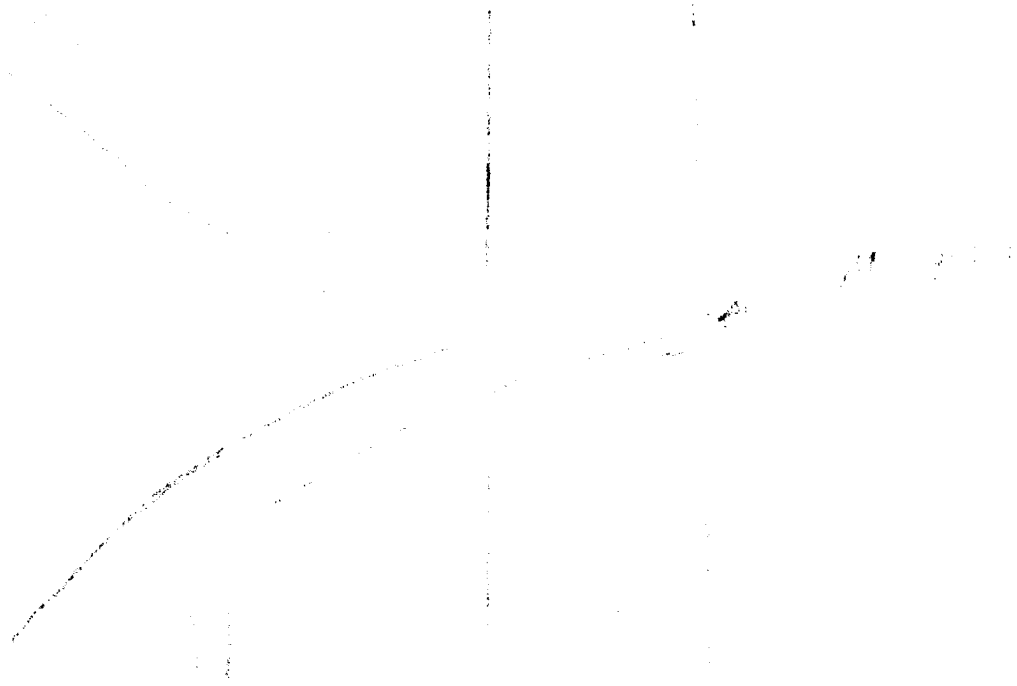
[redacted]

The basic microphone element would utilize a cut down magnet structure similar to that already used on the type B-A microphone. The overall dimension of the microphone would be about 7/8" x 1/2". An important feature of the unit is that the probe and its housing can be detached from the microphone and the size of the resultant is minimum (i.e., there is no additional length on the microphone to support a non-used probe as is presently the case with the B-A microphone). The probe portion can be easily attached as well as the one or two stage amplifiers when desired. The overall frequency response of the microphone would be approximately from 250-6000 cps. It is estimated that 6 complete unitized sets can be obtained in about 7 months for about $40,000. A proposal is currently being prepared and will be sent to APD for evaluation.

The second microphone project discussed is a research program whose end product would result in a unitized microphone similar to that described above with the exception of size. It would be the aim of this program to keep all the microphone elements (probe-mike and amplifier) to less than 1/2" diameter and also to keep the lengths of the various elements to a minimum. A new dynamic microphone structure would have to be designed as well as development of smaller pre-amplifiers. The microphone development would aim at a 300-6000 cps response. Such a program utilizing 2 man years (over 18 calendar months) would come to about $100,000 for the development of 6 systems. A proposal is currently being prepared and will be submitted to APD for evaluation.

c. P-119B - Directional Microphone:

c. P-119B - Directional Microphone: During the past month, investigations were continued on a three dimensional array. An array currently being evaluated consists of a circular ring of uniform sensitivity and phase and a line microphone with progressive delay. The microphone array consists of twelve circular rings, 12 inches in outside diameter, spaced one inch apart. The rings surround a folded horn which is used to collect the sound at the end of the stack of rings. The sound energy is collected by a small pressure microphone at the throat end of the horn. A rough sketch of the unit is drawn below.



The directivity of the unit should be the product of the circular ring, directivity and the directivity pattern associated with the line microphone with progressive delay.

The various prototype line microphones built previously (i.e., line microphone with a pressure element, a line microphone with progressive delay and a pressure element and 2 line microphones with progressive delay connected with a first order gradient element) have been evaluated and compared to the standard microphones. (condenser and parabolic). As was mentioned in previous reports the aim of the work going on is to evaluate as many different types of possible directional microphone designs and assemble all the possible designs so that a final choice can be made if any of them come near to meeting operational requirements. Since the

expenditure rate on this program

expenditure rate on this program has not been as heavy as originally anticipated, the task will probably be extended into the fall of 1957. Continual investigation will be carried on until about early summer (or until there are no more probable paths to explore) and a decision will be made whether to expend the remaining funds for the construction of a prototype suitable for APD field testing. The subject will also be covered quite comprehensively in a final report so that answers to questions arising in the future concerning a directional microphone will most likely be discussed.

d. P-185 - Audio Noise Reduction: [redacted] has finished the design of a ten channel prototype circuit. The unit will be thoroughly tested and checked before the other 8 prototypes are built (there will be 80 channels covering the frequency range from 700-3800 cps). The entire system will be housed in a 19" relay rack standing about 7 feet high. Since there is no convenient way to evaluate the effectiveness of the idea until the complete multi-channel is built, there is nothing to report on this subject. 25X1

e. P-202 - Cordless Earphones: Work on this project is just beginning and initial investigations are being begun at about 500 KC to 5 MC. It is expected that there will be more definite results to report on by the next project monitor.

f. As regards the briefcase recorder, [redacted] stated that although he would like to work on the program, he had been advised by [redacted] that several people he had been relying on to work on the project would not be available. Therefore, he felt that at the present time [redacted] would not be able to undertake this development. When asked if he felt if any of the specifications presented were unreasonable, he replied that he thought if he could undertake the job the specifications for the most part could be met. 25X1 25X1 25X1

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TSS/APD

Distribution:
Orig. P-189 w/att
1-P-119B
1-P-185
1-P-202
1-Dr. Gorton
1-Chrono

TSS/APD [redacted] /bf (5 Mar 57) 25X1